

## PATENT ABSTRACTS OF JAPAN

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(71)Applicant : NIPPON TELEGR & TELEPH CORP  
<NTT>

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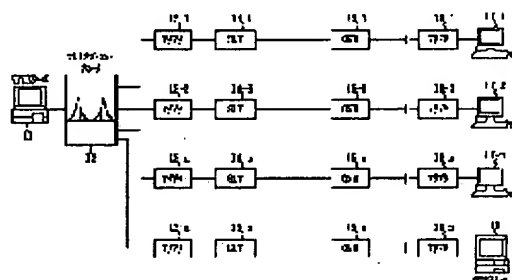
(72)Inventor : IRIE KAZUNARI  
MORIZAKI MASATO  
OTA NORIHISA

## (54) GROUP COMMUNICATION METHOD

## (57)Abstract:

PURPOSE: To lighten the load on a managing server device by downloading the addresses of terminals which communicate and a routing table from the managing server device to the terminals and a multiprotocol bruter.

CONSTITUTION: A personal computer terminal 17-1 accesses the managing server device 11 first and informs it of a request to start communication with a personal computer terminal 17-2. The managing server device 11 after confirming the access right transfers the address of the personal computer terminal 17-2 to the personal computer terminal 17-1 and informs the personal computer terminal 17-2 of the address of the personal computer terminal 17-1 and the presence of the communication request. The personal computer terminal 17-1 sends the state back to the managing server device 11. When the terminals are ready to communicate, the managing server device 11 informs the personal computer terminal 17-1 of the state of the personal computer terminal 17-2, sends the indication that the personal computer terminals 17-1 and 17-2 are ready to communicate, and sets the routing path between the personal computer terminals 17-1 and 17-2 in the multiprotocol bruter 12.



## LEGAL STATUS

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29.10.1999

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CLAIMS

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[Claim(s)]

[Claim 1] In the group correspondence procedure which communicates between the members which connect two or more computer terminals to management server equipment through a communication line and a multi-protocol brouter, and are registered into this management server equipment While the aforementioned management server equipment transmits address information to the terminal and terminal of the partner point to the communication demand from a computer terminal, routing information is notified to the aforementioned multi-protocol brouter. The group correspondence procedure characterized by the aforementioned multi-protocol brouter performing routing between terminals.

[Claim 2] The group correspondence procedure according to claim 1 which arranges the aforementioned multi-protocol brouter to the aforementioned management server equipment side, and is performed by concentrating routing.

[Claim 3] The group correspondence procedure according to claim 1 which arranges the aforementioned multi-protocol brouter to a terminal side, and is performed by distributing routing.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] this invention is used for communication between computers. It is related with the group correspondence procedure which communicates with two or more computer terminals in between the members especially registered into management server equipment, or an information server.

[0002]

[Description of the Prior Art] The group correspondence procedure which communicates between the members beforehand registered into the management server equipment installed in the network side from the former as the method of communication between computers is known. In the conventional group correspondence procedure, a center server can be accessed by the predetermined protocol from a terminal, and offer of various kinds of communication service can be received on a server.

[0003] Drawing 5 is drawing explaining the group correspondence procedure of the conventional example to which a terminal accesses management server equipment through the telephone line, and shows physical SHITESUMU composition. With this composition, a modem 32 is connected to the center server equipment 31 as management server equipment, and this modem 32, and a user's personal computer terminal 35-1 - 35-n are connected through the modem 34-1 by the side of the exchange 33 by the side of a network, and a terminal - 34-n. Here, it assumes that center server equipment 31 is in the city, and when it is out of town, it connects through a transit exchange and a trunk line further. In addition, as the modem 34-1 the personal computer terminal 35-1 - for 35-n - 34-n, the modem of the modem group which consists of two or more sets, or multiport can be used.

[0004] In this composition, a user uses personal computer terminal 35-i (i=1-n) to his modem 34-i, and connects with center server equipment 31 by exchange 33 course by the telephone line. If a circuit is connected, center server equipment 31 will return the prompt which directs login to personal computer terminal 35-i, and a user will input an account name and a password from personal computer terminal 35-i. If the content of an input is in agreement with registration data, login to center server equipment 31 can be completed, and can receive the service currently offered. That is, all users can be attested with management server equipment, and all services containing an electronic conversation called chat, a bulletin board, etc. can be carried out by the same server.

[0005] In addition, although this example shows the example using the general analog telephone line, it can also connect, without using a modem using a digital circuit. However, in that case, the adapter for interface conversion is needed.

[0006] Drawing 6 shows the group correspondence procedure of the conventional example which accesses management server equipment by the TCP/IP protocol. By this method, the interface of the Ethernet widely used for online communications at the network side is prepared, and a server is accessed by the TCP/IP protocol generally used in the field of online communications. Namely, the hub 42 which passes a signal on the level of an Ethernet signal is connected to the management server equipment 41 which performs group management. This hub 42, and the

personal computer terminal 47-1 - 47-n The adapter 43-1 by the side of a network - 43-n, It connects through Data Circuit Terminating Equipment (SLT) 44-1 by the side of a network - 44-n, Data Circuit Terminating Equipment 45-1 by the side of a subscriber - 45-n, and the adapter 46-1 by the side of a subscriber - 46-n. Moreover, the information server 48 which offers service is connected to a hub 42 through adapter 43-m, Data Circuit Terminating Equipment 44-m, 45-m, and adapter 46-m.

[0007] An adapter 46-1 - 46-n, and 46-m change the signal from an Ethernet terminal into a digital circuit interface. Moreover, an adapter 43-1 - 43-n, and 43-m change the signal from a communication line into an Ethernet signal. In the case of ONU (Optical Network Unit) and metal, Data Circuit Terminating Equipment 45-m by the side of Data Circuit Terminating Equipment 45-1 by the side of a subscriber - 45-n and the information server 48 is DSU (Digital Service Unit), when communication media are optical fibers. It is called.

[0008] In this composition, the gestalt which receives service after logging in to management server equipment 41 from the personal computer terminal 47-1 - 47-n, or the procedure of access is almost equivalent to the conventional example shown in drawing 5 . However, in the conventional example of drawing 6 , the ether packet from the personal computer terminal 47-1 - 47-n was sent to the center side via the digital circuit, and it has returned to the ether packet by the adapter 43-1 - 43-n. Thus, since the ether packet is transmitted, it is possible as a protocol to use TCP/installation productivity offering used widely on an ether packet in the field of online communications. For this reason, a user can use two or more services simultaneously on IP packet, accesses management server equipment, and communication between personal computer terminal 47-1 - 47-n can be performed via this management server equipment, or he can access the information server 48.

[0009]

[Problem(s) to be Solved by the Invention] However, in the conventional group correspondence procedure, when the number of users accessed simultaneously increased, there was a fault that an excessive load was applied to management server equipment.

[0010] this invention solves such a technical problem and aims at offering a group correspondence procedure with few loads of management server equipment.

[0011]

[Means for Solving the Problem] The group correspondence procedure of this invention connects two or more computer terminals to management server equipment through a communication line and a multi-protocol brouter. In the group correspondence procedure which communicates between the members registered into this management server equipment While management server equipment transmits address information to the terminal and terminal of the partner point to the communication demand from a computer terminal, routing information is notified to a multi-protocol brouter, and it is characterized by a multi-protocol brouter performing routing between terminals.

[0012] Here, a multi-protocol brouter is explained briefly. As a device which relays the signal which flows a cable top The "repeater" which reproduces and relays a signal simply, a "hub" with the function to see the address and to judge whether a packet is passed to the next network segment, or a "bridge", The "router" which transmits by analyzing some protocols of the Network layer as used in the field of an OSI reference model, or a transformer PODO layer in addition to the function of a bridge,

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**TECHNICAL FIELD**

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**EFFECT OF THE INVENTION**

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[Effect of the Invention] as explained above, the group correspondence procedure of this invention communicates by downloading the address and routing table of a terminal which communicate from management server equipment to a terminal and a multi-protocol router, without going via management server equipment -- like this -- \*\* -- it can \*\* Therefore, there is an effect which can mitigate the load of management server equipment, and high-speed routing of becomes possible, and becomes possible [ offering the colorful service using two or more protocols ].

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## PRIOR ART

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**TECHNICAL PROBLEM**

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[Problem(s) to be Solved by the Invention] However, in the conventional group correspondence procedure, when the number of users accessed simultaneously increased, there was a fault that an excessive load was applied to management server equipment.

[0010] this invention solves such a technical problem and aims at offering a group correspondence procedure with few loads of management server equipment.

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MEANS

[Means for Solving the Problem] The group correspondence procedure of this invention connects two or more computer terminals to management server equipment through a communication line and a multi-protocol brouter. In the group correspondence procedure which communicates between the members registered into this management server equipment While management server equipment transmits address information to the terminal and terminal of the partner point to the communication demand from a computer terminal, routing information is notified to a multi-protocol brouter, and it is characterized by a multi-protocol brouter performing routing between terminals.

[0012] Here, a multi-protocol brouter is explained briefly. As a device which relays the signal which flows a cable top The "repeater" which reproduces and relays a signal simply, a "hub" with the function to see the address and to judge whether a packet is passed to the next network segment, or a "bridge", The "router" which transmits by analyzing some protocols of the Network layer as used in the field of an OSI reference model, or a transformer PODO layer in addition to the function of a bridge, The function of a bridge is added to the function of a router and the "brouter" which transmits a signal by the function of a bridge is known about the protocol which cannot be processed by the function of a router. If the case of TCP/IC is explained to an example, a hub or a bridge operates on the level of an ether packet, a router operates on the level of IP packet, and a brouter can perform routing processing about IP packet, and can pass a signal as it is except IP protocol. The "multi-protocol brouter" used by this invention is a brouter which can recognize two or more protocols simultaneously and can transmit them.

[0013] A multi-protocol brouter is arranged to a management server equipment side, you may carry out by concentrating routing and a multi-protocol brouter is arranged to a terminal side, and you may perform routing dispersedly.

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OPERATION

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[Function] It communicates from two or more computer terminals by two or more computer terminals or computer terminals, and information servers between the members beforehand registered into the management server equipment installed in the network side via the communication line and the multi-protocol router based on the predetermined communications protocol. At this time, the address information is transmitted to a multi-protocol router, a computer terminal, or an information server from management server equipment. Thereby, a routing path is set up in a multi-protocol router, and routing is performed by the multi-protocol router. Thereby, it can communicate without going via management server equipment.

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EXAMPLE

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[Example] Drawing 1 is the block diagram showing the equipment configuration of the first example which enforces the group correspondence procedure of this invention. This equipment is equipped with the personal computer terminal 17-1 of management server equipment 11 and plurality - 17-n, and the information server 18, and is connected through the multi-protocol brouter 12 and a communication line. The multi-protocol brouter 12 is arranged at the management server equipment 11 side. between the multi-protocol brouter 12, the personal computer terminal 17-1 - 17-n, and the information server 18 The adapter 13-1 which changes the signal from a communication line into an Ethernet signal - 13-n, 13-m, Data Circuit Terminating Equipment 14-1 by the side of a network - 14-n, 14-m, It connects through Data Circuit Terminating Equipment 15-1 by the side of a subscriber - 15-n, 15-m and the adapter 16-1 which changes the signal from an Ethernet terminal into a digital circuit interface - 16-n, and 16-m. In the case of ONU and metal, it is referred to as DSU when the communication media of the Data Circuit Terminating Equipment by the side of a subscriber are optical fibers. Although this invention is not limited by communication media, OSU is explained to an example here.

[0016] In this composition, the multi-protocol brouter 12 is equipped with two or more I/O (an individual port or multiplex logical port), and performs routing between ports, or switching corresponding to two or more protocols. In the initial state, only the address information of management server equipment 11 is given to each personal computer terminal 17-1 - 17-n as the communications-partner point. Moreover, also in the multi-protocol brouter 12, routing is set up so that all the packets from the personal computer terminal 17-1 - 17-n may be transmitted to management server equipment 11. When it follows, for example, personal computer terminal 17-i (i=1-n) starts communication, the data from the personal computer terminal 17-i are first sent to adapter 16-i as an ether packet from an Ethernet terminal, and are passed to Data Circuit Terminating Equipment 15-i through this adapter 16-i \*\*. Data Circuit Terminating Equipment 15-i sends the data to Data Circuit Terminating Equipment 14-i by the side of a network via a digital communication circuit, and returns it to an ether packet by adapter 13-i. The ether packet is multi-protocol brouter 12 course, and is sent to the management server equipment 11 connected previously. In this invention, management server equipment 11 is accessed only at the start time of this communication, and henceforth, when starting the partner point and communication, it carries out, without minding management server equipment 11.

[0017] Drawing 2 shows the communication procedure at this time. For example, when the personal computer terminal 17-1 starts communication, as shown in drawing 2 (a), the personal computer terminal 17-1 accesses management server equipment 11 first, and notifies the communication start demand with the personal computer terminal 17-2. With management server equipment 11, after the personal computer terminal 17-1 and the personal computer terminal 17-2 attest that it is the user or terminal registered regularly (check of an access privilege), the address of the personal computer terminal 17-2 is transmitted to the personal computer terminal 17-1, and it notifies that there are the address of the personal computer terminal 17-1 and a communication demand to the personal computer terminal 17-2. The personal computer terminal 17-2 returns a state (can it communicate or not?) to management server equipment 11.

Next, when it can communicate, as shown in drawing 2 (b), while management server equipment 11 notifies the state of the personal computer terminal 17-2 to the personal computer terminal 17-1 and takes out the directions which can communicate mutually to the personal computer terminal 17-1 and 17-2, the personal computer terminal 17-1 and the routing path between 17-2 are set as the multi-protocol router 12. These processings are realizable using a standard protocol in fields of online communications, such as ARP (Address Resolution Protocol). The same is said of the case where a communication place is not a personal computer terminal but the information server 18.

[0018] At this time, there are a method of performing address allotment fixed, and a method of assigning the address dynamically at the time of a communication start as address management. Although a security management top has the latter desirable use, even when using any, the notice of the periodical communication state from a terminal to management server equipment or the notice of a communication end can realize a security function by refreshing the routing information in a multi-protocol router.

[0019] Drawing 3 is drawing which shows the layered structure of group communication and explains the above-mentioned procedure from the field of a protocol hierarchy. Although a communicative hierarchy is expressed with an OSI model at seven layers, it simplifies and three layers, a high order layer, a middle layer, and a lower layer, express it here. That is, the layer of a lower layer, an ether packet, or IP packet on it is classified into a middle layer and a pan, and the TCP packet on it is classified into a high order layer for a physical layer. If it is checked by initial setting that a terminal is a registration user, since routing table will be transmitted to a multi-protocol router and the partner terminal address will be transmitted to a terminal, routing between the terminals which communicate in a multi-protocol router, or switching can be performed.

[0020] Routing processing in a multi-protocol router can be performed by ether PAKKETTO or IP packet, and high-speed processing is possible by realizing processing in hard. Moreover, since it does not participate in the data which ride on an ether packet or IP packet, a colorful user's original application service which is not limited to the application of a server can be offered.

[0021] Thus, offer of the colorful service using the mitigation, high-speed routing, and two or more protocols of a load of a management service becomes realizable by performing routing in a middle layer in a multi-protocol router about the packet data from a terminal not passing through a management server.

[0022] Drawing 4 is the block diagram showing the equipment configuration of the second example which enforces the group correspondence procedure of this invention. This equipment is equipped with the personal computer terminal 17-1 of management server equipment 11 and plurality - 17-n, and the information server 18, and is connected through a bridge 21, a communication line and the multi-protocol router 22-1 - 22-n, and 22-m. A bridge 21 is connected to management server equipment 11. between this bridge 21, the personal computer terminal 17-1 - 17-n, and the information servers 18 The adapter 13-1 which changes the signal from a communication line into an Ethernet signal - 13-n, 13-m, Data Circuit Terminating Equipment 14-1 by the side of a network - 14-n, 14-m, It connects through Data Circuit Terminating Equipment 15-1 by the side of a subscriber - 15-n, 15-m, the adapter 16-1 which changes the signal from an Ethernet terminal into a digital circuit interface - 16-n, 16-m and the multi-protocol router 22-1 - 22-n, and 22-m.

[0023] In the initial state, only the address information of management server equipment 11 is given to the multi-protocol router 22-1 - 22-n, and 22-m as the communications-partner point by the side of a center (network side). Moreover, also in the personal computer terminal 17-1 - 17-n, only the address of the multi-protocol router 22-1 connected to each - 22-n, and 22-m is given. Therefore, routing is set up so that all the packets from the personal computer terminal 17-1 - 17-n may be transmitted to management server equipment 11.

[0024] When personal computer terminal 17-i starts communication, the data from the personal computer terminal 17-i are sent to multi-protocol router 22-i as an ether packet from an Ethernet terminal, and are passed to Data Circuit Terminating Equipment 15-i through adapter 16-i. Data Circuit Terminating Equipment 15-i sends the data to Data Circuit Terminating

Equipment 14-i by the side of a network via a digital communication circuit, and returns it to an ether packet by adapter 13-i. Then, the ether packet is bridge 21 course, and is sent to the management server equipment 11 connected previously. In this invention, a management server is accessed only at the start time of this communication, and henceforth, when starting the partner point and communication, it carries out, without minding a management server.

[0025] For example, when the personal computer terminal 17-1 starts the personal computer terminal 17-2 and communication, the personal computer terminal 17-1 accesses management server equipment 11 first, and notifies the communication start demand with the personal computer terminal 17-2. With management server equipment 11, after the personal computer terminal 17-1 and the personal computer terminal 17-2 attest that it is the user or terminal registered regularly (check of an access privilege), the address of the personal computer terminal 17-2 is transmitted to the multi-protocol brouter 22-1 and the personal computer terminal 17-1. Moreover, the address of the personal computer terminal 17-1 is transmitted to the multi-protocol brouter 22-2 and the personal computer terminal 17-2. Thereby, the routing path to the personal computer terminal 17-2 is set up from the personal computer terminal 17-1 via the multi-protocol brouter 22-1, a bridge 21, and the multi-protocol brouter 22-2. Consequently, communication becomes possible, without going via management server equipment 11. It is the same when communicating from the personal computer terminal 17-1 - 17-n to information server equipment 18.

[0026] In addition, it is possible to perform it, even if a setup of a routing path uses any of the address information of an ether packet or IP packet by using a multi-protocol brouter. When connection with an external network is taken into consideration, processing by IP packet is desirable in respect of adjustment, and when rapidity and the versatility of service are taken into consideration, processing by the ether packet of a low layer is desirable.

[0027] Thus, not passing through management server equipment, it communicates only by routing in a middle layer by performing routing control by the multi-protocol brouter connected to each personal computer terminal about the packet data from a personal computer terminal. Thereby, offer of the colorful service using the mitigation, high-speed routing, and two or more protocols of a load of a management server becomes realizable. Moreover, in order to perform distributed processing in the multi-protocol brouter connected to each personal computer terminal, processing can respond now only by the bridge function a center side (network side), and there is an advantage by which the routing processing by the side of the network which traffic concentrates is mitigated.

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**DESCRIPTION OF DRAWINGS**

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[Brief Description of the Drawings]

[Drawing 1] The block diagram showing the equipment configuration of the first example which enforces the group correspondence procedure of this invention.

[Drawing 2] Drawing showing a communication procedure.

[Drawing 3] Drawing which shows the layered structure of group communication and explains a communication procedure from the field of a protocol hierarchy.

[Drawing 4] The block diagram showing the equipment configuration of the second example which enforces the group correspondence procedure of this invention.

[Drawing 5] Drawing explaining the group correspondence procedure of the conventional example to which a terminal accesses management server equipment through the telephone line.

[Drawing 6] Drawing showing the group correspondence procedure of the conventional example which accesses management server equipment by the TCP/IP protocol.

[Description of Notations]

11 41 Management server equipment

12, 22-1 - 22-n, 22-m Multi-protocol router

13-1 - 13-n, 13-m, 16-1 - 16-n, 16-m, 43-1-43n, 43-m, 46-1 - 46-n, 46-m Adapter

14-1 - 14-n, 14-m, 15-1 - 15-n, 15-m, 44-1 - 44-n, 44-m, 45-1 - 45-n, 45-m Data Circuit

Terminating Equipment

17-1 - 17-n, 35-1 - 35-n, 47-1 - 47-n Personal computer terminal

18 48 Information server

21 Bridge

31 Center Server Equipment

32, 34-1 - 34-n Modem

33 Exchange

42 Hub

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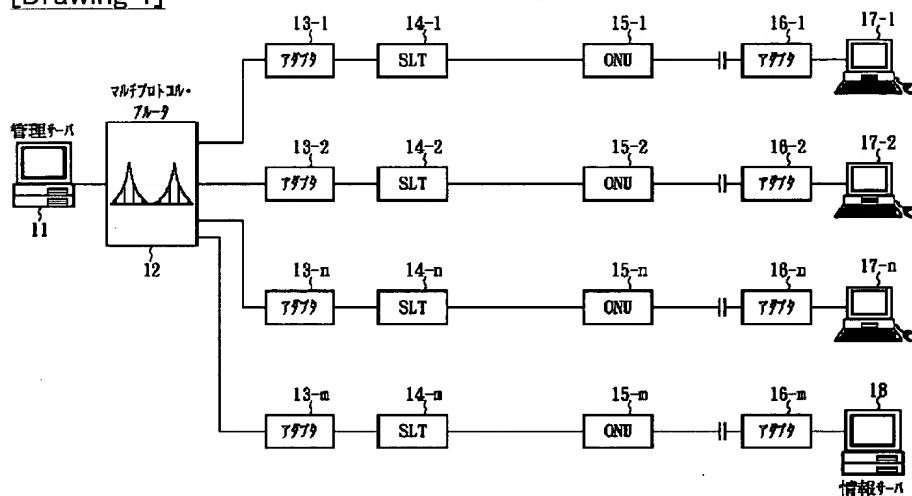
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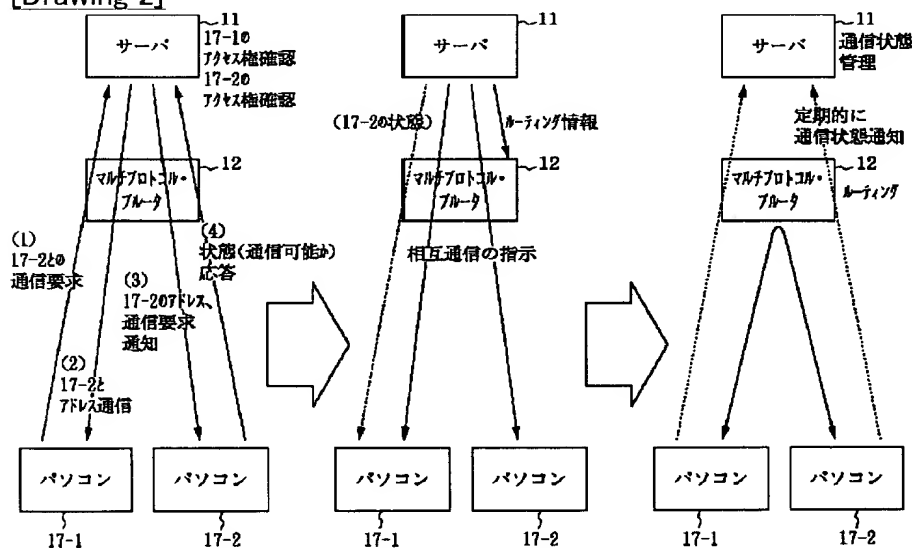
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## DRAWINGS

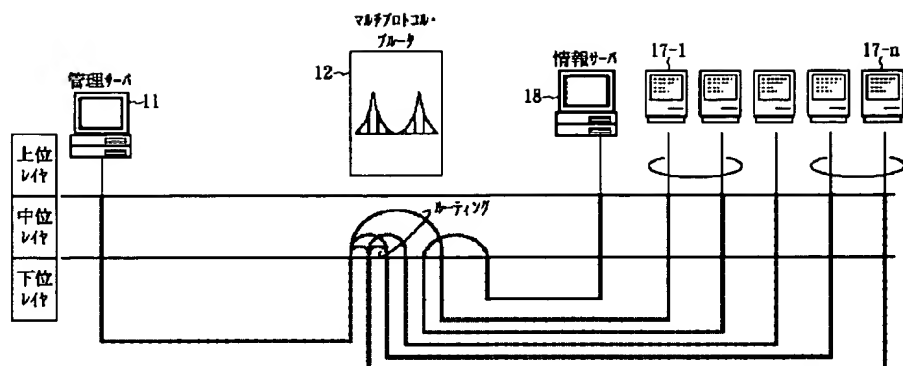
[Drawing 1]



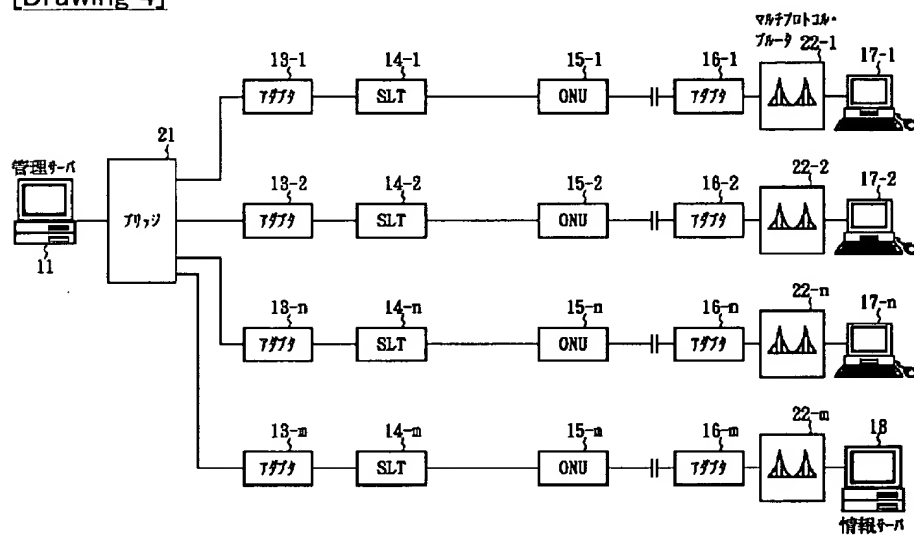
[Drawing 2]



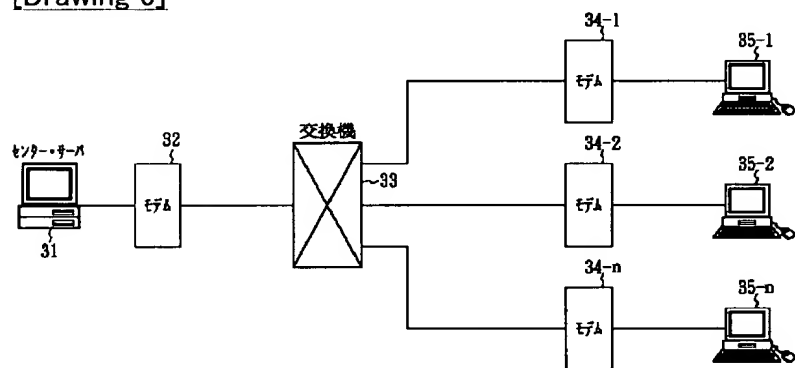
[Drawing 3]



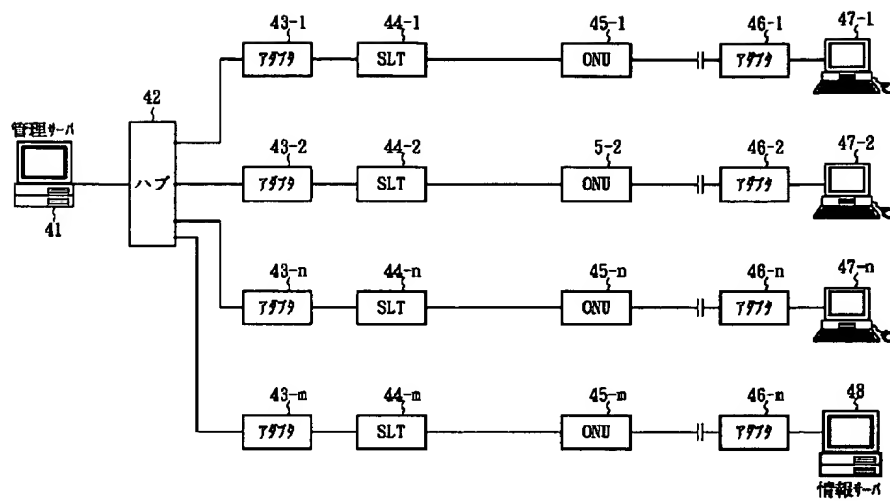
[Drawing 4]



[Drawing 5]



[Drawing 6]



[Translation done.]

## \* NOTICES \*

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

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CORRECTION or AMENDMENT

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[Official Gazette Type] Printing of the amendment by the convention of 2 of Article 17 of patent law.

[Section partition] The 3rd partition of the 6th section.

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H04L	12/56	

[FI]

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[Procedure revision]

[Filing Date] October 29, Heisei 11 (1999. 10.29)

[Procedure amendment 1]

[Document to be Amended] Specification.

[Item(s) to be Amended] 0012.

[Method of Amendment] Change.

[Proposed Amendment]

[0012] Here, a multi-protocol router is explained briefly. As the device which relays the signal which flows a cable top The "repeater" which reproduces and relays a signal simply, a "hub" with the function to see the address and to judge whether a packet is passed to the next network segment, or a "bridge", The "router" which transmits by analyzing some protocols of the Network layer as used in the field of an OSI reference model, or a transport layer in addition to the function of a bridge, The function of a bridge is added to the function of a router and the "brouter" which transmits a signal by the function of a bridge is known about the protocol which cannot be processed by the function of a router. If the case of TCP/IC is explained to an example, a hub or a bridge operates on the level of an ether packet, a router operates on the level of IP packet, and a brouter can perform routing processing about IP packet, and can pass a signal as it is except IP protocol. The "multi-protocol brouter" used by this invention is a brouter which can recognize two or more protocols simultaneously and can transmit them.

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[Translation done.]